



SNAKE RIVER WHITE STURGEON EVALUATIONS
F-73-R-16
Subproject IV, Study IV

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ABSTRACT

From May 11, 1993 to July 26, 1993, we fished for white sturgeon from Swan Falls Dam to Brownlee Dam on the Snake River. Four thousand and sixty hours of setline effort yielded three sturgeon. An additional 10 sturgeon were caught and tagged over 219 hours of angling effort. We were unable to collect any sturgeon with 80 hours of gill net effort in Brownlee Reservoir. Above results were insufficient to estimate population size or status, but populations appear small.

From September 21, 1992 to February 2, 1993, volunteers fished for white sturgeon between C.J. Strike Dam and Swan Falls Dam. A total of 189 fish measuring 60 to 249 cm fork length were caught and tagged. We estimated 280 ± 162 sturgeon are present in this 61 km reach of the Snake River. All but a few sturgeon were caught in the 5 km below C.J. Strike Dam.

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INTRODUCTION

Swan Falls Dam to Brownlee Dam

White sturgeon Acipenser transmontanus provide a popular catch and release sport fishery in many segments of the Snake River. The section between Swan Falls Dam and Brownlee Dam (state harvest management area 3: Walters Ferry to Brownlee Dam; and area 4: Swan Falls Dam to Walters Ferry) contains a sturgeon fishery accounting for only 5% of the total Snake River sport catch in 1991 (Horton 1992). Based on mandatory angler catch cards, an estimated 59 sturgeon were captured by sport anglers between Swan Falls Dam and Brownlee Dam during 1991. Little is known about the status of the sturgeon population in this area. Low angler catch and effort suggest population numbers are limited, however.

Low sturgeon densities could be the result of limited habitat availability or inhibited migration due to dams or water quality degradation from human activities. During the summer of 1990, a fish kill below Weiser included 28 dead sturgeon ranging in length from 99 to 220 cm. It is believed that these sturgeon died from low levels of dissolved oxygen (Hanson et al. 1992).

This study was initiated in 1992 because of the low angler catch data and concern about the 1990 fish kill. This is a second attempt at estimating numbers of white sturgeon residing between Swan Falls Dam and Brownlee Dam on the Snake River. Kruse-Malle (1993) was unable to obtain a population estimate for sturgeon in this area during 1992.

C.J. Strike Dam to Swan Falls Dam

The section of the Snake River between C.J. Strike Dam and Swan Falls Dam (state harvest management area 5) contains a sturgeon fishery which accounted for the second highest sport catch (22%) on the Snake River in 1991 (Horton 1992). Of the 405 sturgeon caught by sport anglers in 1991, 70% were in the 90-180 cm length category. Again, little is known about the sturgeon population in this river segment. Estimates of population size and status are unavailable.

OBJECTIVE

1. To estimate population, age, and size frequency distributions of white sturgeon in the Snake River between C.J. Strike Dam and Brownlee Dam.

STUDY SITE

Swan Falls Dam to Brownlee Dam

The Swan Falls Dam to Brownlee Dam study area on the Snake River is comprised of 195 km of free flowing river and 77 km of reservoir environment. The upper 23 km of the free flowing section are enclosed by steep canyon walls and contain some good sturgeon habitat. In this upper area, there are 20 pools greater than 5 m deep. After dropping out of the canyon, the river opens up and water velocities decrease. This section is composed primarily of shallow riffles and runs.

Steep canyon walls rise up once again as the river enters the upper end of Brownlee Reservoir. The dam was constructed in 1958 by Idaho Power Company for production of hydropower. The reservoir is long and relatively narrow with a water storage capacity of 1,208,648 cubic dekameters. The entire reservoir is bordered by steep canyon walls and provides the most popular sport fishery in the state (Mabbott and Holubetz 1989). Sturgeon have reportedly been caught in the upper section of Brownlee Reservoir near Steck Park. Principal species in the Brownlee fishery are crappie Pomoxis sp., smallmouth bass Micropterus dolomieu, hatchery rainbow trout Oncorhynchus mykiss, and channel catfish Ictalurus punctatus.

C.J. Strike Dam to Swan Falls Dam

The C.J. Strike Dam to Swan Falls Dam study area on the Snake River is composed of 53 km of free flowing river and about 8 km of shallow pool that is Swan Falls Reservoir (Figure 1). Swan Falls pool has a mean depth of 2 m with a 9 hectare capacity. Extensive dewatering of the river channel below C.J. Strike Dam limits the fresh water mussel population, which is an important food source for white sturgeon (Cochnauer 1975). Other than directly below the dam, water velocities are low. The recommended minimum stream resource maintenance flows are 6,620 cfs during the winter and 7,810 cfs during the summer (White and Cochnauer 1975).

METHODS

Swan Falls Dam to Brownlee Dam

Setline sampling in the free flowing section took place from June 2, 1993 to July 26, 1993. In 1992, Kruse-Malle (1993) was unsuccessful in capturing fish for a population estimate using a randomized sampling program. The design resulted in most sampling effort being expended in water less than 5 m deep. Nearly all Snake River sturgeon above C.J.

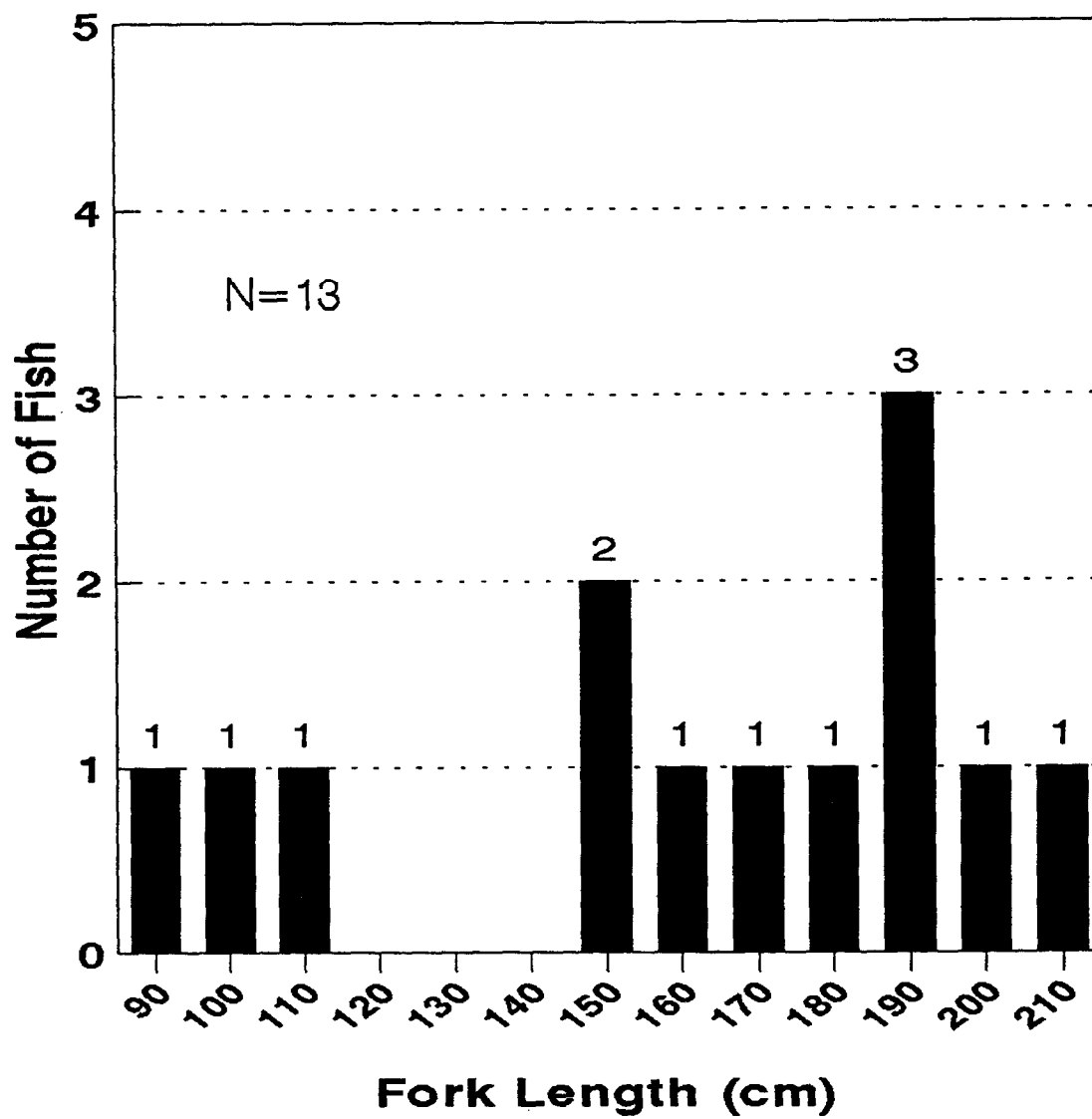


Figure 1. Length frequency distribution of white sturgeon caught between Swan Falls Dam and Brownlee Dam(11 May 1993 to 26 July 1993).

Strike Reservoir were captured in water more than 5 m deep (Jim Chandler, Idaho Power Company, personal communication). Prior to 1993 sampling, I surveyed the entire study reach with a depth finder to identify all locations where water depths exceeded 5 m. I subsequently sampled all these sites with set-line gear. A limited number of randomly located sites in water less than 5 m deep were also sampled.

Each sample site was fished for 48 hours using setline gear. Setline gear was composed of one 16.5 m length of 6 mm sinking braided nylon mainline with a weight and buoy line attached to each end. Six droppers equipped with 2-16/o, 2-14/o and 2-12/o circle hooks were attached to each mainline at 3 m intervals. Hooks were baited with trout or shrimp.

Rod and reel sampling in prime sturgeon habitat was used to supplement setline effort in the free flowing section. Rod and reel gear consisted of 3.5 m sturgeon rods equipped with 27 kg test line, 6/o J hooks attached by a 55 kg test Dacron leader, and a 113-170 g lead weight. Bait varied between shrimp, trout, and pickled herring.

Gill net sampling in upper Brownlee Reservoir took place in 7 sites equally spaced between Steck Park and the Snake River mouth between May 11 and 17. Sample dates for each pair were randomly chosen. Each sample site was fished for eight hours with two sinking gill nets for a total effort of 16 hours per site. Gill nets were 2 m high by 50 m long. One net contained one 25 m panel with 2.5 cm bar mesh and one 25 m panel with 5 cm bar mesh. The second net contained on 25 m panel with 7.5 cm bar mesh and on 25 m panel with 10 cm bar mesh. The small mesh allowed for fish to become entangled but not gilled in the nets. Nets were pulled and checked every hour.

All captured sturgeon were measured to the nearest centimeter. A PIT tag was inserted in the muscle on the right side of the dorsal fin. Hook size and other pertinent information were recorded.

C.J. Strike Dam to Swan Falls Dam

Volunteer anglers tagged sturgeon in this river section between September 21, 1992 to June 25, 1993. Rod and reel gear used in this section of the river was similar to that used in the Swan Falls to Brownlee Dam section. Setline gear identical to that used between Swan Falls Dam and Brownlee Dam (see below) was also utilized intermittently through December 1992. Sites were usually fished with rod and reel and/or setline gear for 24 to 48 hours per trip. All captured sturgeon were tagged with either a metal jaw tag in the dorsal fin, a PIT tag or both. Length, hook size, catch location and other pertinent information were recorded.

Population Estimates

We used Chapman's modification of Peterson mark-recapture estimate for abundance below C.J. Strike Dam. Recapture of marked sturgeon from C.J. Strike Dam to Swan Falls Dam was conducted from December 10, 1993 to February 2, 1994. Effort was apportioned among four equal sections of river (Table 1). Anglers fished from a boat continuously for 24 hours in each section using four rods baited with smelt, herring, squid, or eel. Additional effort was added in the area below C.J. Strike Dam to increase recaptures when no fish were caught below Grandview (rkm 486).

RESULTS

Swan Falls Dam to Brownlee Dam

Project personnel caught and tagged 13 white sturgeon in 4,060 hours of effort (Table 2). Sturgeon lengths ranged from 90 to 213 cm long (Figure 1). All of these fish were caught in the upper 11 km of the study area (Table 3). The only recapture was a fish tagged in the fall of 1992. Most (77%) of the 13 sturgeon were captured via rod and reel (Appendix A).

C.J. Strike Dam to Swan Falls Dam

A total of 189 white sturgeon were tagged at five locations between C.J. Strike Dam and Swan Falls Dam from September 21, 1992 to February 1, 1994. Tagged fish were between 60 and 249 cm long (Figure 2). Seventy-two percent of all tagged fish were between 90 and 180 cm long, similar to the sport catch (Table 4).

Seventy-four sturgeon were tagged and an additional 33 were recaptured during 538 hours of fishing effort between January 1, 1993 and July 1, 1993 for a catch per unit effort (CPUE) of 260/1,000 gear hours (Table 4). Among the five fishing locations, CPUE was highest directly below C.J. Strike Dam. PIT tag numbers and general marking locations are summarized in Appendices for future reference (Appendices B and C).

Population Estimates

We captured a total of six sturgeon in 192 hours of effort (768 rod hours) during our recapture fishing December 10, 1993 to February 2, 1994 (Table 5). No sturgeon were caught from Grandview to Swan falls Dam (rkm 486 to 456). Three fish were recaptures. Based on these recaptures, we estimate 280 ± 162 white sturgeon in the Snake River from C.J. Strike to Swan Falls Dam.

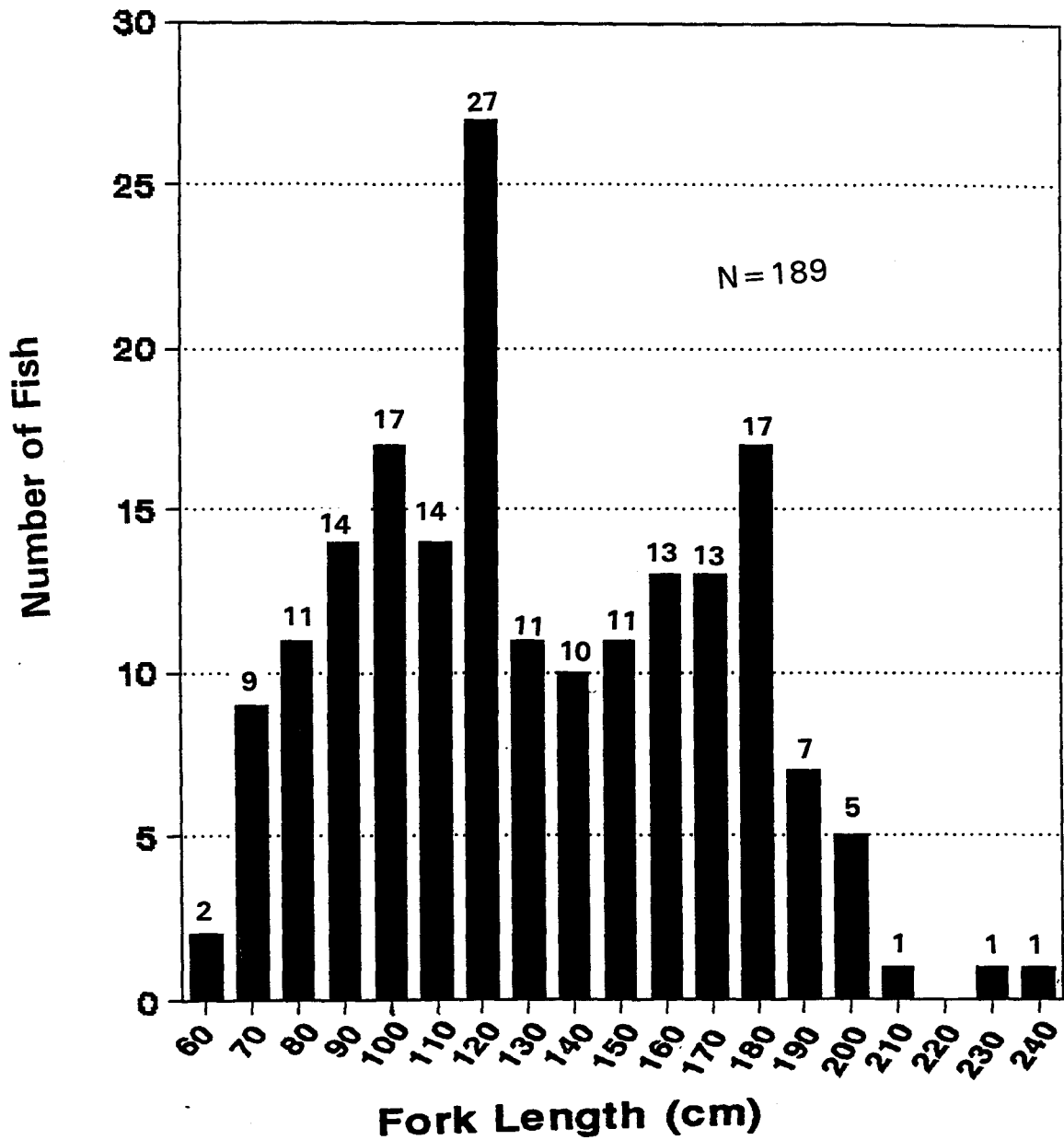


Figure 2. Length frequency distribution of white sturgeon caught between CJ Strike Dam and Swan Falls Dam(21 September 1992 - 1 July 1993).

Table 1. Sturgeon recapture from the Snake River below C.J. Strike Dam at rkm 492.5, August 23 to September 28, 1993.

Date	Effort (h)	Captures	Recaptures	Marked fish
8/23-24/93	24	10	1	
8/25-26/93	24	7	1	
8/30-31/93	24	4	1	
9/27-28/93	24	5	2	
Totals	96	26	5	160

Table 2. Total sturgeon fish effort and catch by gear type from Swan Falls Dam to Brownlee Dam during the spring of 1993.

Gear type	Effort (h)	# caught	CPUE (1,000 gear hours)
Gill net	80	0	
Setline	3,761	3	.8
Rod and Reel	219	10	45.7

Table 3. Catch date, location, length, and tag number of white sturgeon caught from Swan Falls Dam to Brownlee Dam during the spring of 1993.

Date	River mile	Fork length (cm)	Total length (cm)	PIT tag #
06/02/93	454.3	158	178	7F7D0D7A3D
06/03/93	455.6	193	210	7F7D0D6211
06/08/93	457.1	188	200	7F7E694O72
06/08/93	457.1	213	230	7F7E693C4A
06/09/93	451.3	190	213	7F7D0B7678
06/10/93	457.1	156	173	7F7E694B65
06/10/93	457.1	201	219	7F7D336578
06/10/93	457.1	170	189	7F7D364B0F
06/12/93	457.1	90	100	7F7E694A59
06/17/93	457.1	193	--*	7F7D0D6772
06/18/93	457.1	119	130	7F7D412E74
06/18/93	457.1	104	115	7F7D414320
06/26/93	451.3	165	--*	7F7F6B1O82
*These fish were missing the end of their caudal peduncles.				

Table 4. Length frequency distribution and catch per unit effort (CPUE) for angler-reported sport catches from angler reports in 1989-1991 (Horton 1991, 1992) and 1992-1993 volunteer tagging (C.J. Strike Dam to Swan Falls Dam).

Year	n	% of catch			CPUE (1,000 gear hours)
		<90 cm	90-180 cm	>180 cm	
1989	181	19%	62%	19%	62
1990	212	11%	71%	18%	125
1991	405	5%	76%	19%	
Report card means (89-91)	266	12%	70%	19%	
92-93 tagging	140	13%	72%	15%	*260
*CPUE for 1992-93 tagging was calculated from data collected after January 1, 1993.					

Table 5. Sturgeon recaptures from the Snake River, C.J. Strike Dam to Swan Falls Dam, December 10, 1993 to February 2, 1994.

Section	Date	River mile	Effort (h)	Captures	Recaptures	Marked fish
1	12/10-11 /93	456-466	24			
1	01/09-10/94	456-466	24			
2	12/13-14/93	466-476	24			
2	01/11-12/94	466-476	24			
3	12/29-30/93	467-486	24			
4	12/16-17/93	486-494	24	3	1	
4	01 /27-28/94	492	24	1	1	
4	02/01-02/94	492	24	2	1	
Totals			192	6	3	160

We observed one mortality of a tagged sturgeon (PIT tag # 7F7D372E69) on July 24, 1993 at rkm 492.5 that had been dead for several days. External examination showed no apparent injuries.

DISCUSSION

Swan Falls Dam to Brownlee Dam

We did not obtain a white sturgeon population estimate between Swan Falls Dam and Brownlee Dam during 1993; only 13 sturgeon were caught, including one recapture (marked last fall). All 13 fish were caught in the upper 11 km of the study area, mostly on rod and reel. The 1993 setline CPUE (0.8) was only slightly better than my 1992 result of 0.2 fish/1,000 gear hours (Kruse-Malle 1993); both are quite low. Lukens (1982) and Mabbot and Holubetz (1989) also captured few sturgeon below Swan Falls Dam using rod and reel. While quantitative estimates of abundance are not available, the above results, coupled with low angler catches (Horton 1991, 1992), suggest a small sturgeon population that seems to be concentrated immediately below Swan Falls Dam.

Mid-summer temperatures may be a limiting factor to population abundance. During late summer in 1992, surface water temperatures in the Swan Falls Dam to Brownlee Dam study area reached 20°C. Water temperatures greater than 20°C are potentially lethal to sturgeon eggs and fry (Hanson et al. 1992). In the future, thermographs should be placed throughout the study area to provide information about potential temperature limitations.

C.J. Strike Dam to Swan Falls Dam

Prior to January 1991 volunteers anglers did not keep records of hours fished for CPUE or catch locations. After January 1, 1993 these data were recorded. Results revealed that volunteer angling during this period took place in five specific sites within the entire 60 km study area. Fishing effort was not distributed evenly among these sites, either temporarily or spatially. Because of this, we developed a structured capture effort for a population estimate. The estimate of 280 ± 162 sturgeon in this reach is potentially biased due to the unequal effort in section 3 (24 h) and section 4 (64 h) (Table 5) as compared to effort in Sections 1 and 2 (48 h). We suggest this is minimal since no sturgeon were caught in sections 1, 2, or 3 during this recapture effort. Few sturgeon were captured by Idaho Power biologists in this area with additional heavy sampling in 1994 (Jim Chandler, personal communication). While our estimate lacks precision, it does demonstrate that numbers of sturgeon are small for the important fisheries they support below C.J. Strike Dam. There are now numerous marked fish in this population which should assist with future population estimates.

Results suggest mandatory angler reports are an accurate way of assessing population size structure. The size class distribution of fish tagged by Department volunteers is nearly identical to one derived from sport catches from 1989-1991 (Table 4).

RECOMMENDATIONS

1. Intensify sampling for sturgeon to develop population estimates for subsections on the Swan Falls Dam to Brownlee Dam section of the Snake River.
2. Install thermographs at 3-4 sites within the study area to investigate temperature limitations.

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Appendix A. White sturgeon catch information from Swan Falls Dam to Brownlee Dam during the spring of 1993.

PIT tag #	Hook size	Recapture data*	Capture method	Girth (cm)
7F7DOD7A3D	12/0	F	setline	60
7F7DOD6211	14/0	F	setline	75
7F7DOB7678	16/0	F	setline	80
7F7E694B65	7/0	F	rod and reel	58
7F7D336578	9/0	F	rod and reel	83
7F7D364BOF	9/0	F	rod and reel	63
7F7E694072	9/0	F	rod and reel	66
7F7E693C4A	9/0	F	rod and reel	92
7F7E694A59	8/0	F	rod and reel	34
7F7DOD6772	9/0	F	rod and reel	76
7F7D412E74	9/0	F	rod and reel	47
7F7D414320	8/0	F	rod and reel	38
7F7F6B1082	8/0	T**	rod and reel	70
*F - Not a recapture; T - Recaptured **This fish was caught and marked during the fall of 1992.				

Appendix B. Date, location, length, and tag number of white sturgeon caught from the Snake River, C.J. Strike Dam to Swan Falls Dam, September 21, 1992 to February 2, 1994.

Date	River mile	Fork length (cm)	Jaw tag number*	PIT tag number*
09/21/92	---	128	101	---
09/21/92	---	115	102	---
09/21/92	---	135	105	---
09/21/92	---	160	106	---
09/21/92	---	180	108	---
09/21/92	---	210	109	---
09/22/92	---	180	110	---
09/29/92	---	165	112	---
09/29/92	---	185	114	---
09/29/92	---	190	115	---
09/29/92	---	175	116	---
09/29/92	---	120	117	---
09/30/92	---	75	118	---
09/30/92	---	115	119	---
09/30/92	---	93	120	---
09/30/92	---	105	121	---
09/30/92	---	120	122	---
09/30/92	---	158	123	---
10/08/92	---	175	124	---
10/08/92	---	155	125	---
10/08/92	---	121	126	---

Appendix B. Continued.

Date	River mile	Fork length (cm)	Jaw tag number*	PIT tag number*
10/09/92	---	105	127	---
10/09/92	---	123	128	---
10/09/92	---	200	129	---
10/09/92	---	195	130	---
10/09/92	---	153	131	---
10/12/92	---	163	132	---
10/12/92	---	168	133	---
10/12/92	---	135	134	---
10/13/92	---	119	135	---
10/13/92	---	140	136	---
10/13/92	---	94	137	---
10/13/92	---	109	138	---
10/14/92	---	83	139	---
10/15/92	---	65	141	---
10/15/92	---	140	140	---
10/15/92	---	165	142	---
10/16/92	---	148	143	---
10/16/92	---	106	144	---
10/16/92	---	120	145	---
10/28/92	---	100	146	---
10/28/92	---	126	147	---

Appendix B. Continued.

Date	River mile	Fork length (cm)	Jaw tag number*	PIT tag number*
10/28/92	---	158	148	---
10/29/92	---	233	149	---
10/29/92	---	118	150	---
10/29/92	---	78	151	---
10/29/92	---	115	152	---
10/29/92	---	128	153	---
11/12/92	---	86	154	7F7DOB5670
11/12/92	---	94	155	7F7D0B653A
11 /13/92	---	173	156	7F7D0B7974
11/13/92	---	170	157	7F7D0D7545
11/13/92	---	110	158	7F7D0D764C
11/13/92	---	125	159	7F7DOD5F3D
11/13/92	---	195		7F7DOB76OE
11/17/92	---	78	160	7F7DOD6D2E
11 /17/92	---	138	161	7F7D0D6952
11/17/92	---	93	162	7F7DO26A08
11/17/92	---	185	163	---
11/17/92	---	71	164	---
11/18/92	---	101	165	7F7D0D7C26
11/18/92	---	88	166	7F7D0D6D48
12/11/92	---	172	167	7F7D4151OC

Appendix B. Continued.

Date	River mile	Fork length (cm)	Jaw tag number*	PIT tag number*
12/12/92	---	125	168	7F7D434C65
12/12/92	---	188	169	7F7D3E1125
01 /29/93	492.5	185	189	7F7DOB71 OD
01/29/93	492.5	123	---	7F7E6B3812
01/29/93	492.5	175	---	7F7E695912
02/12/93	492	100	---	7F7D272000
02/12/93	492	121	---	7F7D3E1232
03/18/93	492.5	198	---	7F7D32087D
03/18/93	492.5	188	---	7F7D372E69
03/19/93	492.5	168	---	7F7DOD6DOD
03/19/93	492.5	178	---	7F7DOB772O
03/23/93	492	90	---	7F7E693B28
03/23/93	492	70	---	7F7D3E1420
03/25/93	492	68	---	7F7E6B2653
03/30/93	492	130	---	7F7E6946OF
04/06/93	472.5	140	---	7F7D3733O6
04/08/93	492	125	---	7F7D3E1 F5F
04/19/93	491	150	176	7F7E695455
04/19/93	491	114	177	7F7E693C59
04/19/93	491	160	178	7F7E69594C
04/19/93	491	146	179	7F7D434E7

Appendix B. Continued.

Date	River mile	Fork length (cm)	Jaw tag number*	PIT tag number*
04/19/93	491	90	---	7F7D3763B46
04/19/93	491	73	---	7F7D430A22
04/19/93	491	80	---	7F7E6993F37
04/22/93	492.5	115	180	7F7D3E1 C48
04/22/93	492.5	85	---	7F7E6B0B79
04/22/93	492.5	156	181	7F7D265F50
04/22/93	492.5	100	---	7F7D373B0C
04/22/93	492.5	86	---	7F7D344C7A
04/23/93	492	165	182	---
04/26/93	492.5	201	183	7F7E6B2C7C
05/04/93	492.5	100	---	7F7E693ED3
05/04/93	492.5	137	184	7F7D374E60
05/05/93	492.5	101	185	7F7D3710E7
05/05/93	492.5	118	186	7F7E693B44
05/11/93	494	203	187	7F7D283D26
05/11 /93	494	120	188	7F7D372ADE
05/11/93	494	195	190	7F7E69431C
05/11/93	494	124	191	7F7D414A2B
05/11/93	494	155	192	7F7E693F35
05/11/93	494	188	193	7F7E6B3531
05/13/93	494	155	194	7F7D3E1 DOA

Appendix B. Continued.

Date	River mile	Fork length (cm)	Jaw tag number*	PIT tag number*
05/13/93	494	124	195	7F7D414D14
05/18/93	472.5	99	---	7F7E693A52
05/19/93	472.5	100	---	7F7D39602F
05/19/93	472.5	128	---	7F7D37342F
05/21/93	492.5	103	197	7F7E6B2C71
05/21/93	492.5	141	198	7F7E694C70
05/21/93	492.5	75	---	7F7D292E17
05/21/93	492.5	141	---	7F7D415616
05/25/93	472.5	109	200	7F7E6B3802
05/25/93	472.5	88	---	7F7D364326
05/26/93	472.5	104	---	7F7D430952
05/27/93	492.5	83	---	7F7E694F7C
05/27/93	492.5	123	---	7F7E695374
05/27/93	492.5	113	---	7F7D3E1 D20
05/27/93	492.5	185	---	7F7D365403
05/28/93	492.5	105	---	7F7D363F7D
05/28/93	492.5	133	---	7F7E6956OF
05/28/93	492.5	126	---	7F7D3E1272
06/03/93	494	166	---	7F7E6B2958
06/03/93	494	171	---	7F7E694D40
06/03/93	494	191	---	7F7E693C63

TABLES

Appendix B. Continued.

Date	River mile	Fork length (cm)	Jaw tag number*	PIT tag number*
06/03/93	494	94	---	7F7D364C7A
06/22/93	492.5	95	---	7F7E6B3914
06/22/93	492.5	99	---	7F7E694353
06/22/93	492.5	125	---	7F7E69430E
06/22/93	492.5	132	---	7F7E693F1 E
06/22/93	492.5	178	---	7F7D322D02
06/22/93	492.5	128	---	7F7E695505
06/23/93	492.5	106	---	7F7D395577
06/23/93	492.5	240	---	7F7E694903
06/24/93	492.5	73	---	7F7D3E3148
06/24/93	492.5	114	---	7F7D321 D6D
06/24/93	492.5	119	---	7F7D322310
06/25/93	492.5	110	---	7F7D3E312C
06/26/93	---	168	---	7F7E6B1082
07/06/93	---	178	---	7F7E693F56
07/06/93	---	90	---	7F7E694F33
07/07/93	---	124	---	---
07/07/93	---	84	---	---
07/07/93	---	173	---	---
07/07/93	---	124	---	---
07/07/93	---	175	---	---

Appendix B. Continued.

Date	River mile	Fork length (cm)	Jaw tag number*	PIT tag number*
07/12/93	---	178	---	7F7E693B0C
07/12/93	---	157	---	7F7E694B6A
07/12/93	---	117	---	7F7D3E1 B33
07/13/93	---	144	---	7F7E694C33
07/13/93	---	130	---	7F7E693E1 F
07/14/93	492.5	151	---	7F7D272F2B
07/14/93	492.5	132	---	7F7D433777
07/14/93	492.5	94	---	7F7E693D4C
07/14/93	492.5	150	---	7F7D41384E
07/15/93	492.5	189	---	7F7D266946
07/15/93	492.5	180	---	7F7D364037
07/23/93	492.5	196	---	7F7E6B350F
07/23/93	492.5	130	---	7F7E6B350D
07/24/93	492.5	119	---	7F7E6B3870
07/30/93	492.5	173	---	7F7DEBOC29
07/30/93	492.5	147	---	7F7D353207
07/30/93	492.5	175	---	7F7D337D0E
08/23/93	492.5	81	---	---
08/23/93	492.5	157	---	---
08/23/93	492.5	142	---	---
08/23/93	492.5	124	---	---

Appendix B. Continued.

Date	River mile	Fork length (cm)	Jaw tag number*	PIT tag number*
08/23/93	492.5	75	---	---
08/23/93	492.5	171	---	---
08/23/93	492.5	122	---	---
08/23/93	492.5	71	---	---
08/23/93	492.5	196	---	---
08/25/93	492.5	105	---	---
08/25/93	492.5	127	---	---
08/25/93	492.5	142	---	---
08/25/93	492.5	165	--	---
08/25/93	492.5	159	---	---
08/25/93	492.5	184	---	---
08/30/93	492.5	90	---	?
08/30/93	492.5	178	---	?
08/30/93	492.5	112	---	?
09/27/93	492.5	184	---	---
09/27/93	492.5	163	---	---
09/27/93	492.5	95	--	---

Appendix C. Total number of fish caught, hours fished, and recaptures at each fishing location between C.J. Strike and Swan Falls (January 1, 1993 to July 1, 1993).

Date		rkm 472.5	rkm 491	rkm 492	rkm 492.5	rkm 492.5	
Jan 1-4	# fish caught Hours fished	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	
Jan 15-28	# fish caught Hours fished	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	
Jan 29- Feb 11	# fish caught Hours fished	N/A N/A	N/A N/A	N/A N/A	3 - 0* 23	N/A N/A	
Feb 12-25	# fish caught Hours fished	N/A N/A	N/A N/A	4 - 2* 11.5	N/A N/A	N/A N/A	
Feb 26- Mar 11	# fish caught Hours fished	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	
Mar 12-25	# fish caught Hours fished	N/A N/A	N/A N/A	8 - 5* 42.25	5 - 1 * 24	N/A N/A	
Mar 26- Apr 8	# fish caught Hours fished	N/A N/A	N/A N/A	4 - 1* 83.25	N/A N/A	N/A N/A	
Apr 9-22	# fish caught Hours fished	N/A N/A	8 - 0* 28	0 13.75	7 - 3* 11.5	N/A N/A	
Apr 23- May 6	# fish caught Hours fished	N/A N/A	N/A N/A	1 - 0* 26	5 - 0* 39.25	N/A N/A	
May 7-20	# fish caught Hours fished	4 - 1* 28.5	N/A N/A	N/A N/A	N/A N/A	15 - 7* 50.25	
May 21- Jun 3	# fish caught Hours fished	3 - 0* 27	N/A N/A	N/A N/A	21 - 6* 61.75	N/A N/A	
Jun 4-17	# fish caught Hours fished	N/A N/A	N/A N/A	N/A N/A	0 12.5	N/A N/A	
Jun 18- Jul 1	# fish caught Hours fished	N/A N/A	N/A N/A	N/A N/A	19-7* 55	N/A N/A	
							Grand Total
Total fish		7	8	17	60	15	107
Hours fished		55.5 (10%)	28.5 (5%)	176.75 (33%)	227 (42%)	50.25 (9%)	538
Total recaptures		1 (3%)	0	8 (24%)	17 (52%)	7 (21%)	33
CPUE (1,000 gear hours)		126	281	96	264	299	260
*Number of recaptures out of total number of fish caught.							

JOB PERFORMANCE REPORT

State of: Idaho

Name: River and Stream Investigations

Project No.: F-73-R-16

Title: Snake River White Sturgeon Evaluations

Subproject No.: IV

Jobs No: 2-7

Study No.: IV

ABSTRACT

No activities were conducted under Jobs 2-7. Jobs 2 and 5 were dependent on obtaining population estimates with greater precision. Idaho Power Company has initiated intensive sturgeon investigations in the Snake River. Because their studies will provide population estimates and address many of the objectives of this study, no further work is planned on Jobs 2-7.

Authors:

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Virgil K. Moore
Fisheries Research Manager

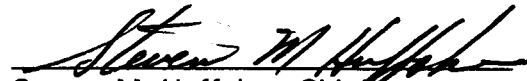
Submitted by:

Gretchen O. Kruse-Malle
Senior Fisheries Technician

Virgil K. Moore
Fisheries Research Manager

Approved by:

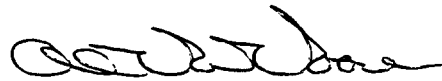
IDAHO DEPARTMENT OF FISH AND GAME



Steven M. Huffaker, Chief
Bureau of Fisheries

Funds Expended:

State:	\$27,883
Federal:	\$83,648
Total:	\$111,531



Al Van Vooren
Fishery Research Manager